MOTOR CHALLENGE
Project Fact Sheet

A Business Case Study

City of Milford Pump Optimization Project Yields $96,000 Net Present Value

Total Value Added

Net Present Value:	$96,000
Internal Rate of Return:	60%
Payback:	1.7 years

Benefits

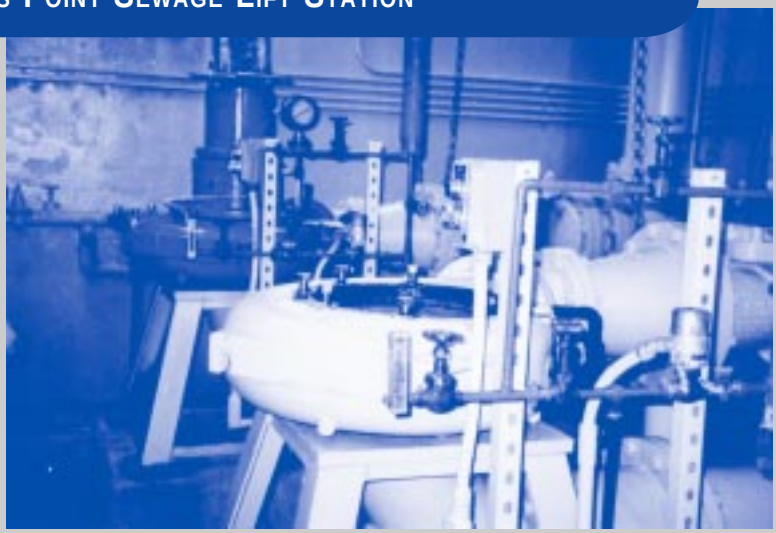
- Reduced energy consumption by over 15%
- Reduced cleaning and maintenance
- Enhanced worker safety/ working conditions
- Eliminated pump failure resulting from flooding
- Extended equipment's expected life
- Improved community relations
- Contributed to lowering maintenance staff

The City of Milford wanted to save energy at one of its 37 sewage stations. Built in 1963, this pump station handles approximately 750 million gallons of raw sewage per year. The old system operated with 3 75-hp pumps, vertically mounted below ground, each driven by motors positioned above the pumps at ground level. The old system was designed to operate with one pump under normal conditions, with a second pump kicking in during very heavy inflow and a third pump as a backup. Each pump rarely operated for more than 15 minutes at a time.

Decision

With the help of ITT Flygt Corporation (new-pump manufacturer) and United Illuminating (local electric utility), engineers investigated total system performance and decided to replace one of the 3 original pumps with a small booster pump. Driven by a 35-hp motor, this pump operates at lower outflow rates for longer running periods (1-2 hours, on average).

Welches Point Sewage Lift Station



Rationale

This decision produced the following results:

- ***Reduced energy consumption by over 15%*** due to lower outflow rate, which reduced losses in the piping system
- ***Reduced cleaning and maintenance*** requirements (supplies and labor) and associated downtime.
  - eliminated one complete overhaul every 1.5 years
- ***Enhanced worker safety/working conditions***
  - new, submersible pump is much easier to move if repair/replacement is needed (reducing potential for back injuries)
  - high noise levels virtually eliminated
  - increased cleanliness reduces chances of infections and slipping
- ***Extended equipment's expected life*** due to longer operationg times and reduced power input
- ***Eliminated pump failure resulting from flooding*** because new pump is submersible
- ***Improved community relations*** by increasing cleanliness and decreasing noise
- ***Contributed to lowering maintenance staff*** requirements (increased from 8 pump stations to 36 without increasing maintenance staff)

These modifications can be replicated at other sites (new sites or retrofit), but must overcome the lowest-first-cost bid requirement (although these pumps save money in the long run, the pumps' initial cost is greater than less efficient pumps).

VALUE ADDED:

Equipment Cost, fully installed:	$16,000	
Annual Savings:		
Energy savings	$2,960	37,000 kWh/yr
Maintenance Savings:		
Supplies	$3,330	eliminate 1 overhaul every 1.5 years
Labor	$3,330	est'd 50/50 split between mat'l and labor
Total	**$9,620**	

INCREMENTAL CASHFLOW ANALYSIS

($Thousands) — Time (Years 0 - 12)

(years)	0	1	2	3	4	5	6	7	8	9	10	11	12
SAVINGS													
Energy		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Supplies		3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Labor		3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
COST	16.0												
Incremental savings	(16.0)	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6

Time (Years 13 - 25)

(years con't)	13	14	15	16	17	18	19	20	21	22	23	24	25
SAVINGS													
Energy	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Supplies	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Labor	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
Incremental savings	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6

NET PRESENT VALUE	$96[1]
INTERNAL RATE OF RETURN	60%

[1]Cashflows are discounted at 7%.

Motor Challenge, administered by the Office of Industrial Technologies, is a voluntary partnership program with U.S. industry to promote the use of energy-efficient electric motor systems. Thousands of industrial partners have joined Motor Challenge and are improving their, and in turn, the Nation's competitiveness and efficiency.

Motor Challenge assists the OIT Industries of the Future by identifying near-term gains in energy efficiency these industries can achieve by adopting existing technologies.

PROJECT PARTNERS

City of Milford
Milford, CT

ITT Flygt Corporation
Trumbull, CT

United Illuminating Company
New Haven, CT

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

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